

## **IN THE CLAIMS**

What is claimed is:

1. A surgical needle, comprising:

a linear body portion including:

5 a proximal end section;

a central section; and

a distal end section, the distal end section having a substantially parabolic configuration for producing a substantially uniform stress profile along a length thereof.

10 2. The surgical needle of claim 1, wherein the distal end section has a diameter determined according to the following equation:

$$d = (((32W)/(\pi\sigma)) * (X_n))^{(1/3)}$$

where

**d** = measured diameter at location  $X_n$ ;

15 **W** = load normal to the needle;

**X<sub>n</sub>** = distance from a distal-most end of the needle; and

**σ** = chosen stress restraint.

3. The surgical needle of claim 2, wherein the distal end section includes a  
20 distal tip having a uniform taper.

4. The surgical needle of claim 3, wherein the distal tip has a length which is substantially equal to a diameter of the central section of the surgical needle.

5. The surgical needle of claim 1, wherein the proximal end section is configured and adapted to secure a suture thereto.

5 6. The surgical needle of claim 1, wherein the central section has at least one of a rectilinear, circular, oval, triangular, I-beam and ribbon shaped cross-sectional profile.

7. A uniform stress needle, comprising:  
10 a proximal end section configured and adapted to secure a suture thereto;  
a central section having a uniform transverse cross-sectional profile; and  
a distal end section having a parabolic surface profile for producing a substantially uniform stress along a length thereof, the surface profile being defined by the following equation:

15 
$$d = (((32W)/(\pi\sigma)) * (X_n))^{(1/3)}$$

where

**d** = measured diameter at location  $X_n$ ;  
**W** = load normal to the needle;  
 **$X_n$**  = distance from a distal-most end of the needle; and  
20  **$\sigma$**  = chosen stress restraint.

8. The uniform stress needle of claim 7, wherein the distal end section includes a distal tip having a uniform taper.

9. The uniform stress needle of claim 8, wherein the distal tip has a length which is substantially equal to a diameter of the central section of the needle.

5 10. A surgical needle, comprising:

a body portion including:

a proximal end section;

a central section; and

a distal end section, the distal end section having a substantially parabolic  
10 configuration for producing a substantially uniform stress profile along a length thereof,  
the distal end section including a distal tip having a uniform taper.